

## **Remarks/Arguments**

In view of the foregoing amendments and the following remarks, Applicants request reconsideration of the present application. Claims 25 and 32 have been amended to correct minor typographical errors. New Claims 40-85 have been added.

The Examiner has rejected Claims 4, 7, 17, 20, 27 and 34 under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner states that with respect to Claims 4 and 17, the claims are vague and indefinite as it is unclear what the term "reacting" includes and requests clarification. With respect to Claims 7, 20, 27 and 34, the Examiner states that the Claims are unclear as to what is encompassed by the term "linear feature".

With respect to Claims 4 and 17, Applicants respectfully submit that the term "reacting" would be readily understood by one of ordinary skill in the art. At page 22, the present application provides that:

After deposition of the material systems, the material systems can be reacted such as by heating the substrate to react the system components. Other means for further reacting the material systems include exposing the system to a forming gas or polymerizing a deposited organic compound. In addition, it may be desirable to heat the material systems at a sufficient temperature and for a sufficient amount of time to sinter or fuse the particles into solidified form.

In the context of chemical arts, a reaction is a chemical transformation or change. (See, e.g., Merriam Webster's Collegiate Dictionary, 10<sup>th</sup> Ed., 1996, page 972, which is attached as Appendix A). Thus, "reacting" is to cause a chemical transformation or change. It is respectfully submitted that one of ordinary skill in the art would understand the term "reacting" to include the methods listed in the specification, as well as other common methods for reacting materials.

With respect to Claims 7, 20, 27 and 34, Applicants also submit that one of ordinary skill in the art would readily understand what is encompassed by the term "linear feature". Figure 4 of the present application clearly illustrates the difference between linear and non-linear features. Specifically, Fig. 4(a) illustrates the material systems that are collected on a substrate in a staggered manner such that the different material systems are deposited in small individual regions of the substrate. This is analogous to the method used by in U.S. Patent No. 5,985,356 by Schultz et al. (discussed below) to collect materials. In contrast, Figs. 4(b) and 4(c) illustrate linear features. Figure 4(b) illustrates material systems deposited in the form of individual test strips and Fig. 4(c) illustrates a continuous test strip patterned across a substrate. One aspect of the linear features according to the present invention is that a material property of one portion of the linear feature is different than the material property at a different portion of the linear feature due to the gradient nature of the linear feature.

In view of the foregoing, removal of these rejections under 35 U.S.C. § 112 is respectfully requested.

The Examiner has rejected Claims 1, 13, 26 and 33 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,985,356 by Schultz et al.

The Examiner states that Schultz et al. teaches a process for depositing a plurality of reacted materials upon specific regions of a substrate and analyzing various properties of the deposited materials. The Examiner states that the materials may be a variety of different material compositions, that the materials are synthesized and analyzed, that a variety of properties can be analyzed, that the components are reacted after deposition which includes heating and that the screening techniques are various.

Applicants respectfully traverse these rejections. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Applicants submit that the Examiner has not met the burden required under 35 U.S.C. §102.

Schultz et al. is directed to a method and apparatus for the preparation and use of a substrate having an array of diverse materials in predefined regions on the substrate. The substrate is prepared by delivering components (i.e., reactants) of materials to predefined regions on the substrate and simultaneously reacting the components to form at least two materials. See, e.g., the Abstract. An array of materials having different chemical compositions is formed by delivering the different reactants to pre-defined regions on the substrate in a step-wise fashion. Multiple deposition steps and masking techniques are used to vary the concentration of a particular reactant that is deposited on a given region of the substrate. A small, precisely metered amount of each reactant component is delivered into each reaction region. (Col. 10, lines 37-39). By varying the amount of the individual reactants that is deposited from one region to another region, different materials can be formed on the substrate.

The methods of the present invention are directed to fabrication of material systems by varying the composition and/or material properties of the material systems on a *real-time basis*. As is disclosed at pages 9-10 of the current specification, real-time basis means that a variable is changed without any substantial interruptions in the operation of the reactor system. This is in contrast to the multiple steps required by Schultz et al. to form different material compositions.

Independent Claim 1 recites a method for the fabrication of a plurality of material systems. The method includes *continuously* providing a material system composition including at least first and second components, depositing the material system onto a substrate and analyzing at least one material property of the material system. A material property of at least one of the first and second components is varied on a *real time basis* such that the material system composition includes a first material composition at a first time and a second material system composition at a second time.

Schultz et al. do not disclose or suggest continuously providing a material system composition to a substrate and varying the material properties of the composition on a *real-time basis* as is required by Claim 1. Schultz et al. disclose that different materials can be formed by sequentially depositing reactants at different locations on a substrate using multiple deposition steps and then reacting the reactants on the substrate. The reactants

are deposited sequentially, requiring discrete multiple steps to form different material compositions and possibly intermediate masking steps. A method and apparatus for varying a property of one of the material components on a real-time basis is not disclosed or suggested by Schultz et al.

In view of the foregoing, it is respectfully submitted that Claim 1 is not anticipated by Schultz et al.

Independent Claim 13 recites a method for the fabrication of a plurality of material systems. The method includes continuously providing a material system composition having at least a first and second components, depositing the material system composition and analyzing at least one material property of the material system composition. The relative concentration of at least one of the first and second components is varied on a real time basis such that the material system composition includes a first material system composition at a first time and a second material system composition at a second time. As is discussed above, Schultz et al. do not disclose or suggest varying the relative concentration of components on a real time basis. Rather, Schultz et al. must rely upon multiple deposition steps of reactants, where each deposition step involves reactants having constant concentrations. The method of the present invention advantageously enables rapid, single-step deposition of material systems having different compositions.

In view of the foregoing, it is respectfully submitted that Independent Claim 13 is not anticipated by Schultz et al.

Independent Claim 26 recites a method for the deposition and analysis of a multi-layer structure, including depositing a first material on a substrate, depositing a second material over the first material to form a multi-layer structure and analyzing the multi-layer structure for at least one material property. The composition of at least one of the first and second materials is varied on a real time basis such that the multi-layer structure includes a first multi-layer composition at a first time and a second multi-layer composition at a second time. As is discussed above, Schultz et al. does not disclose or suggest varying the composition of materials on a real time basis, particularly for the fabrication of multi-layer structures. Rather, Schultz et al. disclose multiple deposition steps, wherein each step utilizes reactants having constant concentrations or compositions.

In view of the foregoing, it is respectfully submitted that Independent Claim 26 is not anticipated by Schultz et al.

Independent Claim 33 recites a method for the deposition and analysis of a multi-layer structure, including depositing a first material on a substrate, depositing a second material over the first material to form a multi-layer structure and analyzing the multi-layer structure for at least one material property. The ratio of the first material to the second material is varied on a real time basis. As is discussed above, Schultz et al. do not disclose or suggest varying the ratio of two materials on a real time basis for the fabrication of multi-layer structures.

In view of the foregoing, it is respectfully submitted that Independent Claim 33 is not anticipated by Schultz et al.

The Examiner has also rejected Claims 6-9, 19-22, 27, 28 and 35 under 35 U.S.C. §103(a) as being unpatentable over Schultz et al. Applicants respectfully traverse these rejections.

Claims 6-9 are dependent upon Claim 1 and include all the limitations thereof. Claim 1 is discussed above. Further, it is respectfully submitted that Schultz et al. does not disclose or suggest the deposition of a linear feature as is required by Claim 7. Schultz et al. merely disclose the deposition of discrete material systems in individual regions of a substrate. Further, the method disclosed by Schultz et al. is not conducive to the formation of linear features.

Claims 19-22 depend upon Claim 13 and include all of the limitation thereof. Claim 20 recites that the depositing step comprises depositing a linear feature. As is discussed above, Schultz et al. do not disclose or suggest the deposition of a linear feature.

Claims 27 and 28 depend upon Claim 26 and include all the limitation thereof. As is discussed above, Schultz et al. do not disclose the deposition of linear features as is required by Claim 27. Claim 35 depends upon Claim 33 and includes all limitations thereof.

In view of the foregoing, removal of these rejections under 35 U.S.C. § 103(a) is respectfully requested.

Applicants have added new Claims 40-85. Independent Claim 40 is Claim 2 re-

written in independent form and Claims 41-46 relate to Claims 3-9. Claim 47 is Claim 10 re-written in independent form and Claims 48-51 relate to Claims 4-7. Claim 52 is Claim 11 re-written in independent form and Claims 53-54 relate to Claims 6-7. Support for Claims 55 and 56 can be found at page 26 and page 29 of the application. Claim 57 is Claim 12 re-written in independent form and Claims 58-59 relate to Claims 6-7 and support for Claims 60-63 can be found on pages 22 and 29 of the application. Claim 64 is Claim 15 re-written in independent form and Claims 65-69 relate to Claims 17-21. Claim 70 is Claim 23 re-written in independent form and Claims 71-74 relate to Claims 17-20. Claim 75 is Claim 24 re-written in independent form and Claims 76-77 relate to Claims 19-20. Support for Claims 78-79 can be found on page 26 and 29 of the application. Claim 80 is Claim 25 re-written in independent form and Claims 81-82 relate to Claims 19-20. Support for Claims 83-85 can be found at page 29 of the application.

It is respectfully submitted that each of the foregoing new claims is fully supported by the original specification and is allowable over the prior art.

The Examiner has also provisionally rejected Claims 1-39 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-5, 13-15, 18-21, 24-27, 31, 40-43, 64-67, 75-77, 80-83, 86-89, 93-95, 103-105, 108-111 and 114-117 of U.S. Patent Application Serial No. 09/821,723. If and when appropriate, Applicants will submit a Terminal Disclaimer.

The fee for the additional claims (large entity) is calculated below:

For	Claims Remaining After Amendment	Highest Number Previously Paid For		Extra Claims	Rate		Additional Fee
Total Claims	85	36	=	49	x \$18	=	\$882
Independent Claims	12	4	=	8	x \$84	=	\$672
Multiple Dep. Claim		-		\$280		=	\$
Total Fee						=	\$1554

A check in the amount of \$1554 for the payment of this fee accompanies this response. Please charge any underpayment and credit any overpayment to Deposit Account No. 50-1419.

Applicants hereby request a three-month extension of time for responding to the outstanding Examiner's Action and enclose a check for the appropriate fee. It is not believed that any additional fees are owed, however, any such additional fees can be charged to Deposit Account 50-1419.

Respectfully submitted,

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